

AMENDMENTS IN THE CLAIMS

Please newly add claims 35-43 by this amendment as follows:

1 1. (Previously twice Amended) An optical channel monitoring apparatus, comprising:
2 an input unit comprising a lensed fiber receiving a wavelength division multiplexed
3 (WDM) optical signal via an optical transmission medium and producing a collimated beam of
4 optical signals, said input unit further comprising a concave lens receiving said collimated beam
5 and outputting a plurality of optical signals that have a continuous range of incidence angles; and
6 a filter for receiving said plurality of optical signals from the input unit and separating the
7 WDM optical signal into a plurality of optical signals having different wavelengths using the
8 difference between resonance lengths according to the incident angles.

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2 2. (Previously once Amended) The apparatus of claim 1, further comprising an array of
3 detectors receiving optical signals output by said filter and converting said optical signals into
4 electrical signals, each detector being positioned to pick up a specific wavelength of incident
5 radiation emanating from the filter, said apparatus further comprising a microprocessor calculating
signal to noise ratio and spectral components of said optical signals output from said filter.

1 3. (Previously once Amended) The apparatus claim 2, an etalon is used as the filter.

1 4. (Previously once Amended) An optical channel monitoring apparatus, comprising:
2 an input part receiving a multiplexed, collimated optical signal and dispersing said

3 collimated optical signal via a concave lens into a beam having different incident angles;

4 an optical filter receiving the wavelength division multiplexed (WDM) optical signal
5 having different incident angles from the input part and separating the spanned WDM optical
6 signal into a plurality of optical signals having different wavelengths using the difference between
7 resonance lengths according to the different incidence angles; and

8 a plurality of detectors, each detector being spatially positioned to receive incident radiation
9 of a specific wavelength, said plurality of detectors detecting the intensity of each of said plurality
10 of optical signals having different wavelengths and converting said optical signals to electrical
11 signals.

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2 5. (Previously twice Amended) An optical channel monitoring method, comprising the
steps of:

3 receiving a wavelength division multiplexed (WDM) optical signal from an optical
4 transmission medium and outputting, via a concave lens, a plurality of optical signals spanning a
5 continuous range of incidence angles;

6 receiving said plurality of optical signals spanning said range of incident angles and
7 separating the WDM optical signal according to wavelengths using the difference between
8 resonance lengths according to the different incidence angles; and

9 detecting the intensity of each of said plurality of optical signals having different
10 wavelengths and converting said intensity into a corresponding plurality of electrical signals.

1 6. (Canceled)

1 7. (Previously once Amended) The apparatus of claim 3, further comprising a beam size
2 controller between said etalon and said detector to amplify said plurality of optical signals having
1 different wavelengths in order to be detected by said array of detectors.

1 8. (Canceled)

1 9. (Previously once Amended) The apparatus of claim 4, said concave lens dispersing an
2 input collimated WDM beam into a beam spanning a range of angles, said range of angles being
3 about 10 degrees.

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1 10. (Previously once Amended) The apparatus of claim 9, further comprising an optical
2 amplifier amplifying each of said plurality of optical signals having different wavelengths output
3 by said filter allowing said plurality of optical signals having different wavelengths to be detected
4 by corresponding ones of said plurality of detectors.

1 11. (Original) The apparatus of claim 4, said optical filter being a Fabry-Perot etalon.

1 12. (Previously once Amended) The apparatus of claim 10, further comprising a
2 microprocessor that determines the wavelength and the optical signal to noise ratio for each of said

3 plurality of optical signals having different wavelengths from said plurality of electrical signals
4 produced by said plurality of detectors.

1 13. (Original) The method of claim 5, further comprising the step of inputting each of said
2 plurality of electrical signals into a microprocessor.

1 14. (Previously once Amended) The method of claim 13, further comprising the step of
2 determining spectral components and the optical signal to noise ratio for each wavelength in said
3 plurality of optical signals having different wavelengths by processing said plurality of electrical
4 signals by said microprocessor.

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1 15. (Previously once Amended) The method of claim 14, further comprising the step of
2 amplifying said plurality of optical signals having different wavelengths immediately after
3 separating said optical signals according to wavelengths and immediately prior to said detecting
4 step.

1 16. (Original) The method of claim 15, a Fabry-Perot etalon is used to separate said WDM
2 signal into said plurality of optical signals having different wavelengths.

1 17. (Previously once Amended) A method for monitoring and diagnosing spectral
2 components and signal to noise ratios of a WDM optical signals passing through an optical fiber,

3 said method comprising the steps of:

4 outputting said optical signals out of an end of said optical fiber, said end of said optical
5 fiber being lensed producing collimated optical signals upon being output from said optical fiber;

6 inputting said collimated optical signals into a cylindrical concave lens producing a
7 continuous span of output angles of propagation of said optical signals;

8 inputting said span of optical signals into a Fabry Perot etalon resonator to separate said
9 optical signals by wavelengths based on incident angles input into said etalon;

10 inputting said optical signals separated by wavelengths onto an array of detectors producing
11 electrical signals corresponding to wavelengths of said optical signals output from said etalon; and

12 inputting said electrical signals into a microprocessor to calculate spectral components of
13 said optical signal and signal to noise ratio of said optical signal.

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1 18. (Previously added) The method of claim 17, said continuous span of angles being 10
2 degrees corresponding to a 25 nm range of wavelengths being diagnosed and monitored.

1 19. (Previously added) The method of claim 17, said method being able to analyze spectral
2 components of said optical signal with a resolution of 0.1 nm.

1 20. (Previously once Amended) The method of claim 18, said etalon having a thickness
2 of 28 microns and the FSR of the etalon being 30 nm.

1 21.(Previously added) The method of claim 17, further comprising the step of amplifying
2 said optical signals separated by wavelengths emerging from said etalon prior to inputting said
3 optical signals onto said array of detectors.

1 22. (Previously once Amended) The apparatus of claim 11, said etalon being 28 microns
2 thick, said etalon having a FSR of 30 nm, said apparatus having a resolution of 0.1 nm.

1 23. (Previously once Amended) The apparatus of claim 3, said etalon being 28 microns
2 thick, said etalon having a FSR of 30 nm, said apparatus having a resolution of 0.1 nm.

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cont₂ 24. (Previously added) The apparatus of claim 1, said filter being an etalon having a
 thickness of 28 microns.

1 25. (Previously added) The apparatus of claim 1, said filter being an etalon having a free
2 spectral range of 30 nm.

1 26. (Previously added) The apparatus of claim 1, said filter being an etalon wherein said
2 continuous range of incident angles is greater than 10 degrees.

1 27. (Previously added) The apparatus of claim 4, said optical filter being an etalon having
2 a thickness of 28 microns.

1 28. (Previously added) The apparatus of claim 4, said optical filter being an etalon having
2 a free spectral range of 30 nm.

1 29. (Previously added) The apparatus of claim 4, said filter being an etalon wherein said
2 incident angles spanning a range greater than 10 degrees.

1 30. (Previously added) An optical channel monitoring apparatus monitoring the spectral
2 components and the signal to noise ratio of data channels in a wavelength division multiplexed
3 (WDM) optical signal in an optical fiber, said apparatus comprising:

4 a concave lens receiving a collimated WDM optical signal from an optical fiber and
5 emitting a beam spanning a range of angles, said range of angles being at least 10 degrees;

6 n 30 micron thick etalon receiving said spanned beam and outputting light where the
7 wavelength of said outputted light is dependent on the angle of incidence of light on the etalon,
8 said light output from said etalon having a range of 30 nm in wavelength; and

9 an array of detectors receiving said light output from said etalon, each detector being
10 positioned to receive light of a specific wavelength in said 30 nm range of wavelengths, said
11 detectors converting said received light into electrical signals.

1 31. (Previously added) The apparatus of claim 30, said etalon having a resolution of about
2 0.1 nm.

1 32. (Previously added) The apparatus of claim 30, said etalon having a finesse of about

2 300.

1 33. (Previously added) The apparatus of claim 30, said etalon having a free spectral range

2 of about 30 nm.

1 34. (Previously added) The apparatus of claim 30, said apparatus further comprising a

2 microprocessor receiving said electrical signals from said array of detectors, said microprocessor

3 being programmed and configured to calculate the intensity of each spectral component and the

4 signal to noise ratio of each spectral component of said WDM optical signal.

1 35. (New) The apparatus of claim 1, said filter passing a plurality of different channels

2 of different frequencies in said WDM optical signal.

1 36. (New) The apparatus of claim 2, said array of detectors receiving optical signals from

2 more than one channel in said WDM signal.

1 37. (New) The apparatus of claim 1, said WDM optical signal not being demultiplexed

2 prior to impinging on said filter.

1 38. (New) The apparatus of claim 4, said apparatus being absent a demultiplexer.

1 39. (New) The apparatus of claim 4, said plurality of detectors receiving light from a
2 plurality of channels in said WDM signal.

1 40. (New) The method of claim 17, said method being absent a demultiplexing step.

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1 41. (New) The apparatus of claim 30, said WDM signal is not demultiplexed prior to
2 impinging on said etalon.

1 42. (New) The apparatus of claim 30, said array of detectors receiving optical signals that
2 span a range of more than 10 nm.

1 43. (New) The apparatus of claim 2, said array of detectors receiving optical signals that
2 span a range of more than 10 nm.
